

and redetermination of some forms involving very high indices on crystals examined by the late M. Hesseberg. The measurements were made with one of the goniometers devised by Prof. Groth, which gives definite results when the faces are good. The collimator and telescope are fixed, however, at right angles to one another, so that the determination of striated faces, such as many of those examined were, is difficult and uncertain. Much more reliable measurements would be obtained were the angle between collimator and telescope small, and it would be very easy to arrange the collimator so that the angle of incidence and reflection might be varied at will. Prof. Miller used to arrange his goniometer so that the angle between the incident and reflected ray was less than  $20^\circ$ , and was thus able to get rid of a good deal of the difficulty arising from striation.

Mr. Irby has guarded himself from error by the comparison of several independent observations of the angles made by a new face with those adjoining it, with the angles obtained by calculation, and has avoided employing the angles made with faces on more distant parts of the crystal, though the latter would be often better adapted for purposes of calculation. He criticises Prof. vom Rath's method of observation by taking the reflection of a window-bar as signal. The error which would thus arise would not exceed 1' in the case of good faces, and I believe Prof. vom Rath only employs this method of observation with very good faces. Another source of error would be due to the proximity of the signal which would give a considerable error if the edge were not well-centred. Moreover, a goniometer with vertical plane of reflection is very difficult to get into or keep in good adjustment, and errors might arise in this way. None of these errors will, however, account for the impossibility of getting simpler indices for the form {35, 17, 32}, considering how definite were the angles obtained from the several faces of the scalenohedron. A careful criticism of this form at the time it was published, and of all the different ways in which errors might be piled up in the course of the analysis, failed to lead to any result but that of admitting the possibility of forms with these high indices. In the Cambridge collection is a crystal of quartz with an extremely well-developed face, which Prof. Miller has determined to be {50, 19, 19}. It is very slightly rounded on the edge of the prism face. Of course, when the faces are rounded or otherwise distorted, indices calculated from the observations are mere approximations. Seeing the great variations which occur in the angles of well-crystallised minerals, good work might be done in testing the constancy of the angle of the cleavage rhomb in the specimens from different localities. Breithaupt's determinations of this angle are unfortunately not sufficiently reliable.

### LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.]

#### The Molecular Velocity of Gases

YOUR correspondent, M. Hajniš, asserts in a foot-note appended to his letter published in NATURE, vol. xxi. p. 176, that "the formula for the molecular velocity (of gases) was first given by Krönig," and not by Joule. I am at a loss to understand how this statement can be justified.

Krönig's paper appeared in 1856, while Joule's calculation, which is that now generally received, is of date 1848. In his discourse on molecules (*Phil. Mag.*, December, 1873), Prof. Maxwell says: "The further development of the theory is generally

supposed to have begun with a paper by Krönig, which does not, however, so far as I can see, contain any improvement on what had gone before." R.

#### Weaver Birds and Fire-Flies

UNDER the heading "Natural History Notes from Burmah, in NATURE, vol. xx. p. 362 of the present series, Mr. R. Romanis asked if any of your readers have ever seen or heard of weaver birds sticking fire-flies to lumps of mud on the sides of their nest for the purpose of illumination.

The tradition that certain birds of the weaver family (*Ploceidae*) and their allies do this, is prevalent over a large portion of the globe inhabited by these birds. I have traced it personally from China, all parts of India, Burmah, Ceylon, the Malayan Peninsula, Indian Archipelago, Southern, Eastern, and Western Africa, and South America. I have examined "weaver birds" nests from all these countries, and have found lumps of mud sticking inside them, and "therefore it must be true, you know!!"

But for what use are these lumps of mud stuck there?

Some years ago I wrote an article in the *Cape Monthly Magazine* on this very subject, entitled "Strange Stories and their probable Origin," and I started by saying "Where there is smoke there must be fire," quoting the old proverb.

My belief is that these lumps of mud are used as scrapers on which to clean the birds' bills, as I have frequently found the wing cases, and other debris of *Coleoptera*, &c., fixed to them. Hence the superstition that they stick fireflies thereon. I should remind your readers that all the "weavers" are grain feeders and perhaps only occasionally partaking of insect-food, they are bothered by the bits sticking to their bills. I see my tamed birds are most careful in cleaning their beaks.

At the time I wrote my article above alluded to, I was not so conversant with the African "hang-nests" as I afterwards became, but I can affirm that in all the places I have named the superstition, and the mud, is to be found. E. L. LAYARD

British Consulate, Noumea, October 22, 1879

#### The Papau

PERMIT me to add to my friend the Rev. S. J. Whitmee's testimony of the papau being eaten by birds in the Samoan Islands, that it is here (New Caledonia) a favourite food of the "white eye" (*Zosterops*), and in the Loyalty Islands was used as the only bait to attract these birds, of which dozens were brought me—of the three known species of that genus which inhabit that group (see my letters to *Field* newspaper) all caught by the boys through its means. If my memory serves me rightly, I have seen the papau in Mauritius eaten by a species of *Zosterops*. E. L. LAYARD

British Consulate, Noumea, New Caledonia,

October 22, 1879

#### Scale of Colours

IN NATURE, vol. xxi. p. 172, it is stated that at a meeting of the Zoological Society, December 2, 1879, "A letter was read from Mr. E. L. Layard, F.L.S., advocating the desirability of a fixed scale of colour for use among naturalists in describing the plumage and pelages of birds and other animals." Perhaps Mr. Layard is not aware that such a scale, in form of thin 8vo, was published by Patrick Syme in Edinburgh, in 1821, the tints being illustrated by carefully coloured examples. The exact title of the work, a copy of which is in my own library, is as follows:—"Werner's Nomenclature of Colours, with Additions, arranged so as to render it highly useful to the Arts and Sciences, particularly Zoology, Botany, Mineralogy, and Morbid Anatomy. Annexed to which are Examples selected from well known Objects in the Animal, Vegetable, and Mineral Kingdoms." The date given above is that of the second edition, which was Printed for William Blackwood, Edinburgh, and T. Cadells, Strand, London." L. BLOMFIELD

Bath, December 22, 1879

(late JENYNS)

#### On the "Habitat" of *Lophiomy*s

ON reading the review of "Cassell's Natural History," vol. iii., given in NATURE, vol. xxi. p. 136, I find that both the author and the reviewer do not appear to have been aware that the "habitat" of that most interesting rodent, *Lophiomy's imhausi*, is

well known. The rich and interesting Museo Civico di Storia Naturale, of Genoa, amongst its many rarities, contains a magnificent specimen of the *Lophiomyx*, mounted skin and skeleton, which specimen was caught at Keren in the Bogos land, in June, 1870, and forms part of the fine collections made at that place by Dr. Beccari and Marquis Antinori. The native name of the *Lophiomyx*, according to Antinori, is *Tschizza*.

The reviewer cites M. Alphonse Milne-Edwards's impression of the resemblance of *Lophiomyx* to certain opossums, a point in which I cannot completely agree; my impression is that this very remarkable rodent offers one of the best cases of "defensive mimicry," being strangely like a Viverrine carnivore in outward appearance. The granulation of the upper portion of the skull, which extends to the upper surface of the first cervical vertebra, is very peculiar; but it is not strictly correct to assert that nothing of the kind is met with in other mammals; in the very same order, Rodentia, we find a very similar structure in the cranium of the Paca (*Calogenys*), and I believe some allied forms.

HENRY HILLIER GIGLIOLI

Reale Istituto, Florence, December 17, 1879

### On Haloporphyrus lepidion (Risso)

I HAVE recently had occasion to examine two specimens of this rare and remarkable gadoid fish of the Mediterranean, originally described as *Gadus lepidion* by Risso ("Ichthyologie de Nice," p. 118). The first was captured in my presence in the Gulf of Genoa, in July last, from a depth of about 900 metres, the second I received from Nice, where it was captured in deep waters on September 1 last, and I know of a third specimen taken at the latter place. All agree perfectly with Risso's description except in the general colour, a light brown, and not "*un beau rouge incarnat*," while Risso appears to have overlooked the presence of a small patch of vomerine teeth. But our Mediterranean specimens present notable differences from that described by Dr. Günther ("Catalogue of Fishes," iv. p. 358), and referred by him to this species; besides being considerably larger, the British Museum specimen, which is from Madeira, has a much smaller eye and much longer snout and barbel. Such differences *might* depend on age, but I am strongly inclined to consider them specific, and therefore beg to draw the attention of ichthyologists to the case; should my opinion prove correct, the Madeira fish might go by the name of *Haloporphyrus güntheri*.

While rapidly completing the rich series of fishes belonging to the central collection of Italian vertebrata, formed by me in the Florence Zoological Museum, I have recently been able to add thereto a second very rare gadoid, the *Physiculus dalwigki*, Kaup, a new acquisition to the Mediterranean fauna. My specimen was captured at Nice on August 4 last, and strange to say was sent to me as *Uraleptus maraldi*.

Reale Istituto, Florence

HENRY HILLIER GIGLIOLI

### Edison's New Lamp

I OBSERVE in NATURE, vol. xxi. p. 187, a statement to the effect that Mr. Edison has adopted the use of carbon in his new electric lamp, and that the carbon he uses is charred paper or card of the shape of a horse-shoe.

Fifteen years ago I used charred paper and card in the construction of an electric lamp on the incandescent principle. I used it, too, of the shape of a horse-shoe, precisely as, you say, Mr. Edison is now using it. I did not then succeed in obtaining the durability which I was in search of, but I have since made many experiments on the subject, and within the last six months I have, I believe, completely conquered the difficulty which led to previous failure, and I am now able to produce a perfectly durable electric lamp by means of incandescent carbon.

JOSEPH W. SWAN

Underhill, Low Fell, Gateshead, December 29, 1879

### Flow of Viscous Materials

MR. BOTTOMLEY, in his paper on this subject in NATURE, vol. xxi. p. 159, refers to experiments made four years ago, but if he refers to the *Philosophical Magazine*, vol. xxvi. 206, 1845, he will find a notice of an experiment made twenty-four years ago. It occurred thus:—A barrel of pitch, with one end partly knocked out, had been lying in the yard exposed to the sun for some months, and a part of it had run out on the ground.

My late partner, Prof. L. Gordon, visited the wire-rope works one day in August, 1844, and I called his attention to the appearance of the pitch as being a good illustration of Prof. Forbes's theory of glaciers; thereupon he wrote the letter referred to; which is also quoted in Forbes's "Theory of Glaciers," p. 269.

Any sort of pitch, such as that obtained from gas tar, will answer the purpose. If the surface is rubbed over with some white material, the formation of crevasses will be well shown; and if a row of pins are stuck into the pitch about an inch and allowed to project they will soon lose their perpendicularity and thus indicate the movements in the model glacier. The rapidity of flow of course varies with the temperature.

I had a curious illustration of the power of plants in forcing their way through resisting materials. I had covered the ground with about two inches of asphalt, and a dandelion pushed its flower and leaves through this viscous mass.

Ferndene, December 28, 1879

R. S. NEWALL

### Hungarian Earthquakes and the Kolumbács Flies

A NOTE in NATURE, vol. xxi. p. 89, speaking of the recent Hungarian earthquakes, contains, amongst others, the following passage:—"Near Weisskirchen, the old ruins of the Castle of Golubacz have fallen in completely, and in the vicinity several caves were rendered inaccessible. These caves were the breeding places of the dreaded Kolumbács mosquitos, and if this insect is thus exterminated the earthquake may, with all the damage it did, have yet been of some use."

This report is based on obvious error, for it is a well-known fact that the small (3-4 millim. long) Kolumbács flies (*Simulia golumbaczensis*, Fabr.), which, in the southern part of Hungary, especially in the old Banat and the county of Hunyad, cause considerable damage among the pasturing cattle (especially among horned cattle, horses, swine, and sheep), breed by no means in those caves which are to be found around the ancient Galambóc (known nowadays under the name of Golubacz or Kolumbács, on the Serbian territory), but in the shallower parts of the waters extending in great quantities in that country. The course of life of the Kolumbács fly is, for the most part, in conformity with that of many families of the Nemocera, or Tipulariæ group, as are the Culicidæ, many species of flies (Brachycera), the Phryganidæ, &c. The mature and fecundated mother-fly lays her eggs upon the plants vegetating on the water-borders, whence they get on the stones under the water, and other objects, there living through their larva and nymph states until they arrive at their full development.

But, in the first years after 1850, under the rule of the Austrian military system of that time, there did occur the curious fact that—upon the advice of a military officer of the frontier-districts, who, as it was supposed, had made out that the breeding-nests of these flies are in the caves around Galambóc, Old Moldavia, and their environs—the Government of Vienna officially decreed the walling up of the openings of the caves. And actually they were walled up. But in the next mild spring, the conditions of development being favourable again, the Kolumbács fly appeared and ravaged once more. The Viennese Government, on learning this unpleasant and disappointing news, hastened to amend the blunder, and sent to the place a Hungarian *savant*, Vincent Kollár, and a German entomologist, Joseph Mann, to take the question under examination. These, in a brief space of time, succeeded in clearing up the true state of things, and in gathering such a series, as contained all the stages of the development of the Kolumbács fly in numerous specimens. This collection is to be seen now in the entomological section of the Naturalien Cabinet of Vienna, grouped in the best order.

The imputation, therefore, as if it were the Hungarians who had walled up the orifices of the caves in the vicinity of Galambóc, in order to exterminate the Kolumbács flies by that means—an opinion which, as I, this year, happened to hear at the lecture of an eminent German *savant*, is propagated even in Germany—is entirely erroneous and without any foundation.

Budapest, December 2

JULIUS LETHÖ

### Unconscious Thought

RESUMING this subject, I again call attention to the circumstance that unconscious thought in children is more developed than conscious thought, though conscious thought or sensation